

**“Cyber Synergy: Seeking Sustainability through Collaboration between
Virtual Reference and Social Q & A Sites”**

IMLS Annual Report

November 6, 2012

Submitted: November 6, 2012 via mail to:

Grants Administration
Institute of Museum and Library Services
1800 M Street, NW / 9th Floor
Washington, DC 20036-5802

Award Number:

- ✓ LG-06-11-0342-11

Awardee Institution Names:

- ✓ Rutgers, the State University of New Jersey
- ✓ OCLC Online Computer Library Center

Annual Performance Report: From October 1, 2011 to October 1, 2012

Co-Principal Investigators:

- ✓ Marie L. Radford, Associate Professor
 - Rutgers, The State University of New Jersey
 - Phone: (732) 932-7500, ext. 8233
 - Email: mradford@rutgers.edu
- ✓ Lynn Silipigni Connaway, Senior Research Scientist
 - OCLC Online Computer Library Center, Inc.
 - Phone: (303) 246-3623
 - Email: connawal@oclc.org
- ✓ Chirag Shah, Assistant Professor
 - Rutgers, The State University of New Jersey
 - Phone: 732-932-7500 ext. 8240
 - Email: chirags@rutgers.edu

Table of Contents

PURPOSE OF PROJECT	3
RESEARCH ACTIVITIES.....	3
TIMELINE UPDATES	4
PROJECT OUTPUTS AND ACTIVITIES.....	6
RESEARCH OUTCOMES	9
OTHER RESULTS.....	10
ADDITIONAL COMMENTS	11
CERTIFICATION	11
APPENDICES	12
Appendix A: Query Clarification Coding Scheme, Nodes, and Definitions	13
Appendix B: Radford Relational Coding Scheme, Nodes, and Descriptions	20
Appendix C: READ Scale Applied to VRS	29
Appendix D: VRS Duration/Time Factors	32
Appendix E: VRS Librarian Interview Questions	33
Appendix F: VR/SQA User Interview Questions	35
Appendix G: VRS Educational Coding Scheme, Nodes, and Descriptions	38
Appendix H: Coding Scheme for VRS Referrals	40
Appendix I: Dewey Decimal Classes.....	42
Appendix I.1 VRS Dewey Decimal Subject Coding Results	43
Appendix I.2 SQA Dewey Decimal Subject Coding Results	44
Appendix J: VRS Ready Reference Accuracy Category Descriptions with Transcript Examples.....	45
Appendix J.1: VRS Ready Reference Accuracy Coding Results	47
Appendix K: Type of VRS Query, Definitions with Attribution, and Verbatim Examples	48
Appendix K.1: Type of VRS Question Results	50
Appendix L: Typology for Failed Information SQA Questions	51

1.0 Performance Description

1. a. PURPOSE OF PROJECT

Cyber Synergy: Seeking Sustainability through Collaboration between Virtual Reference and Social Q & A Sites is proposing a new model that enables Virtual Reference Services (VRS) to remain viable despite today's environment of reduced resources. It will investigate the possibility of seamless collaboration between knowledge institutions such as libraries and the Social Q&A (SQA) community. VRS are evolving, with new developments coming at a quickening pace to enhance the user experience, and recently allowing access to library services through text-messaging mobile devices and social networking sites. Empirical data are needed, however, to assess the effectiveness of these services. The reduction of library budgets increases the need to determine opportunities to share resources and generate revenue through collaboration. SQA services provide such an opportunity. This research activity will provide evidence for modeling new library collaborative services. The project's three phases will identify VRS system enhancements to help achieve sustainability and to collaboratively leverage subject knowledge to meet user needs and heightened expectations and will last from October 1, 2011 to September 30, 2013.

1. b. RESEARCH ACTIVITIES

- ✓ **IRB Approval and Human Subjects Certifications: IRB approval from Rutgers University** was necessary prior to starting the grant and was accomplished in 11/8/2011. All members of the grant team have received Human Subjects Certification.
- ✓ **Phase I** requires transcript content analysis of 500 randomly selected transcripts from OCLC Question Point's (QP) VRS and 1000 randomly sampled Q & A pairs from Yahoo! Answers, which were made anonymous and are undergoing several analyses to address the proposal's research questions. There are two subgroups of the 500 VRS transcripts: 300 live chat and 200 Qwidget (QW) Instant messaging (IM) transcripts, collected from a corpus of 296, 158 June 2010 through December 2010. The 1000 Q&A pairs from Yahoo! Answers were collected from a corpus of 1+ million September 2007 through February 2010. The transcripts were analyzed with modified methods and coding schemes developed during the *Seeking Synchronicity* IMLS-funded project.
- ✓ **Phase II** consists of in-depth individual telephone interviews with 150 subjects composed of users of QP live chat and QW, users and expert users of SQA services, and VRS librarians. The telephone interview instrument was informed by findings from *Seeking Synchronicity* and *Cyber Synergy* literature and research questions. The telephone interview instrument has undergone revisions after pretesting. VRS librarians as well as SQA and VRS users have

been recruited through a variety of methods, including posting to university and professional library list-servs, and pop-up invitations that appear at the end of VRS sessions.

- VRS Users
 - A pop up message was posted on Maryland AskUsNow! and recruitment emails were sent through several university list-servs with help from our external advisory board members. Some VRS librarian participants posted the recruitment email to VRS users through their list-servs.
- VRS Librarians
 - A recruitment email was sent through the list-serv for QuestionPoint librarians and posted on the dig_ref list-serv for VRS librarians.
- SQA Users
 - A recruitment email was sent out through Kent State University and Rutgers University list-servs. Also a snow-ball sample was used with help from our external advisory board and grant-team.

Thirty-four librarian interviews have been conducted so far. We found that saturation had not been reached after twenty interviews and extended to thirty interviews. After analyzing thirty interviews, we found that saturation had still not been reached, especially for the qualitative questions. We have reopened recruitment until we reach fifty librarians and are in process of conducting interviews.

Seventy-five VRS/SQA users have been recruited. We left recruitment open as these interview participants will probably be harder to reach than the librarians, many of whom were able to participate in the interview at work. We are in the process of conducting fifty VRS and fifty SQA interviews. We anticipate that some respondents will be users of both systems.

- ✓ **Phase III** focuses on creating design specifications to link VRS and SQA to explore solutions for VRS sustainability of the proposed research project. This phase will include two participatory design sessions with policy makers, designers, system experts, and librarians.

TIMELINE UPDATES

We have successfully completed VRS and SQA transcript analysis for four coding schemes, are nearing completion on six coding schemes, and are in progress for one coding scheme as part of Phase I. Phase II is well underway with thirty-four librarian interviews and one VRS/SQA user interview conducted to date. We are on target for our timeline and anticipate having no difficulty in completing Phase III and concluding analysis, finalizing results, writing and revising articles for publication, and continuing dissemination of results.

Transcript Analysis:

Analysis of VRS transcripts has been completed for Accuracy, Type of Question, Educational Level/User Type, and Dewey/Subject level. Coding has been completed or nearly completed for Duration/Time Factors, READ Scale (regarding level of difficulty), Institution, Relational, and Query Clarification and, as appropriate, intercoder reliability analysis is in progress. For SQA pairs, the following analyses are in progress: Question types detection, coding for reasons behind question failure, and identifying ways to address difficult or failed questions. A draft of a coding scheme for librarian interviews has been created from preliminary interview analysis.

✓ **Nearing Completion:**

- **Query Clarification coding:** All primary coding and intercoder reliability checks are complete for all VRS transcripts (350 QP2 and 210 QW) by a team of 5 coders. However, our progress was delayed significantly by the discovery of a coding error occurring in transcripts by many of the coders for this project. We have completed a review of about 460 of the transcripts, with about 100 transcripts remaining to ensure that coding was done accurately and consistently. Approximately 20% of the transcripts needed one or more codes to be updated. It is estimated that this project will be completed by mid-November, 2012. (See Appendix A for QC Coding Scheme).
- **Relational coding:** All relational coding for 560 VRS transcripts (350 QP2 and 210 QW) has been completed by a team of 4 coders. We are in the process of ensuring intercoder reliability (ICR), with approximately 100 transcripts remaining to be analyzed by a second coder. It is estimated that ICR will be complete by the end of November, 2012 (See Appendix B for Relational Coding Scheme).
- **READ Scale coding:** All primary coding of 560 VRS transcripts has been completed; intercoder reliability (ICR) needs to be calculated. (See Appendix C for READ Scale Coding Scheme).
- **Duration/Time Factors computation:** Duration/Time averages and percentages for 560 VRS transcripts have been completed. (See Appendix D for Duration/Time results).

✓ **Telephone Interviews:**

Telephone interviews are being carried out by nine interviewers trained in telephone interview protocol by the former project manager for *Seeking Synchronicity*. The interviews and their analyses are expected to take about 15 months, from January 2012 to March 2013. Recruitment began 7/20/2012 and will continue through fall.

- Thirty-four VRS librarian interviews have been conducted so far (target 50 in total) (See Appendix F for VRS Librarian Interview Questions).
 - Preliminary analysis was conducted to develop a draft of a coding scheme.
- Seventy-five VRS/SQA users have been recruited so far (target 50 VRS and 50 SQA users in total) (See Appendix G for VRS/SQA User Interview Questions).
 - An initial twenty have been contacted to schedule interviews which are in progress.

✓ **Constructing Design Specifications**

This phase of the project will be informed by results from Phase I and II and is scheduled to begin in April 2013 and run to June 2013.

1. c. Project Outputs and Activities

Conference Presentations:

Connaway, L. S. (2012). "The convenience is still better online than in person, you don't have to make trips to the library." Using Virtual Reference Services to Embed the Library in the Academic Workflow. Presented at The XVII Seminário Nacional de Bibliotecas Universitárias, September 16-21, Gramado, Brazil.

Radford, M. L., Connaway, L. S., & Shah, C. (2012). Convergence and Synergy: Social Q&A Meets Virtual Reference Services. Presented at the 75th Annual Meeting of the American Society for Information Science and Technology, October 26-31, 2012, Baltimore, MD.

Shah, C., Radford, M.L., Connaway, L. S., Choi, E., & Kitzie, V. (2012). "How Much Change Do you Get from 40\$?" - Analyzing and Addressing Failed Questions on Social Q&A. Presented at the 75th Annual Meeting of the American Society for Information Science and Technology, October 26-31, 2012, Baltimore, MD.

Work Currently Submitted for Conference Presentation (under review):

Shah, C., He, D., Radford, M. L., Oh, J. S., & Connaway, L. S. (under review). Collaboration in Action: Enabling Innovative Scholarship with Social and Crowdsourcing Services. Panel submitted for possible presentation to the iConference 2013, Fort Worth, TX, February 12-15, 2013.

Participation in Refereed Panel (accepted):

Radford, M. L., Connaway, L. S., Lanclos, D. M., & Radford, G. P. (2013). Inspiring Initiatives in Qualitative Inquiry. Panel accepted for presentation at the Association of College & Research Libraries 2013 conference, April 10-13, 2013, Indianapolis, IN.

Publications:

Radford, M. L. & Connaway, L. S. (in press, January, 2013). Not Dead Yet! A Longitudinal Study of Query Type and Ready Reference Accuracy in Live Chat and IM Reference. *Library & Information Science Research*, 35(1).

Online Proceedings for Refereed Paper:

Radford, M. L., Connaway, L. S., & Shah, C. (In press, 2012). Convergence and Synergy: Social Q&A Meets Virtual Reference Services. Paper to be published in the Proceedings of the 75th Annual Meeting of the American Society for Information Science and Technology, October 26-31, 2012, Baltimore, MD.

Shah, C., Radford, M.L., Connaway, L. S., Choi, E., & Kitzie, V. (In press, 2012). "How Much Change Do you Get from 40\$?" - Analyzing and Addressing Failed Questions on Social Q&A. Paper to be published in the Proceedings of the 75th Annual Meeting of the American Society for Information Science and Technology, October 26-31, 2012, Baltimore, MD.

Papers in Progress:

Radford, M. L., Connaway, L. S., & Shah, C. (2012). Convergence and Synergy: Social Q&A Meets Virtual Reference Services. *To be updated with new results for publication in a referred journal.*

Shah, C., Radford, M.L., Connaway, L. S., Choi, E., & Kitzie, V. (2012). "How Much Change Do you Get from 40\$?" - Analyzing and Addressing Failed Questions on Social Q&A. *To be updated with new results for publication in a referred journal.*

Radford, M. L., Connaway, L. S., & Shah, C. READ Scale Analysis of VRS. One of the first applications of READ Scale for level of difficulty applied to VRS. Initial draft being written, analysis complete, ICR yet to be completed.

Evolving Coding Schemes:

The following coding schemes have been further developed and/or used during the process of analyzing data from the virtual reference transcripts:

- ✓ Query Clarification Coding Scheme (See Appendix A)
 - Explores VRS transcripts for instances where the user's information need is clarified by the librarian or the user themselves.
- ✓ Radford Relational Communication Coding Scheme (See Appendix B)
 - Identifies interpersonal aspects of VRS interactions by examining relational facilitators and relational barriers.
- ✓ READ Scale (See Appendix C)
 - The Reference Effort Assessment Data Scale (READ Scale)(Gerlich & Berard, 2007) is a six point scale that rates the effort required for each reference question.
- ✓ Duration (See Appendix D)
 - This analysis measured session and wait times for VRS sessions from June-December 2010. The Total Average Wait Time was 67 seconds (1.12 minutes), while the Total Average Session Time was 1,126 seconds (18.77 minutes)
- ✓ Educational Level Coding (See Appendix G)
 - Identifies VRS user's educational level based on user self-identification or inference (for example, if a user discusses a college assignment or refers to a college library card).
- ✓ Referral (See Appendix H)
 - VRS transcripts coded for instances of a librarian sending the user to another human being to get the answer to their query. Preliminary results showed that 28% of transcripts contained referrals and that the majority of referrals were Policy and Procedural referrals (45%).
- ✓ Subject (Dewey) Coding (See Appendix I, I.1, I.2)
 - VRS and SQA transcripts were coded for subject into the hundred divisions of the ten main DDC classes, 690 total VRS questions were coded, where social sciences (17%) and technology (12%) were the largest percentages at and (results in Appendix J.1). 200 SQA informational questions were coded and the largest percentages were also found for social sciences (38%) and technology (28%). Results are in Appendix I.2.
- ✓ Accuracy (for Ready Reference) (See Appendix J, J.1)
 - Teams of coders evaluated the accuracy of chat ready reference answers in VRS transcripts by thoroughly checking responses using authoritative web sites and subscription-based databases and any citations/links provided by the librarian/staff member. In cases where links were incorrect or not provided, coders used the above tools to determine the correct response. Two coders judged each answer, placing each answer into one, and only one, of the following categories:
 1. Correct with Citation
 2. Correct without Citation
 3. Correct without Citation, No Citation Needed

4. Incorrect with Citation
5. Incorrect without Citation
6. Incorrect (without specific information requested, with only general/related resource)
7. Other

Categories 1 through 5 are consistent with Arnold and Kaske's (2005) taxonomy. To be considered correct and coded into categories 1-3, the answer must have been accurate and complete. Further, correct responses must provide information that answers the specific question rather than gives general information on the topic. In cases where users refined their questions through the course of the interaction, there may be a series of questions and references to be considered. If one of several links provided the correct answer, the answer was considered correct. 90% were found to be accurate for Ready Reference and 75% were correct with citation included. Details of accuracy results can be found in Appendix J.1.

- ✓ Type of Question for VRS (See Appendix K, K.1)
 - Criteria and category schemes from Katz (1997), Kaske and Arnold (2002), and Arnold and Kaske (2005) were used for the initial coding of VRS question types. These included six categories: Directional, Ready Reference, Subject Search (note that Katz, 1997 and Arnold and Kaske, 2005, called this "specific search"), Research, Policy and Procedural, and Holdings. During the 2004-2006 coding process, two additional categories: "No Question" and "Inappropriate" emerged (Radford & Connaway, 2005-2008). In addition, Reader's Advisory questions were also found as defined by Ross, Nilsen, and Dewdney (2002) and Ross, Nilsen, and Radford (2009). The largest number and percentage of questions were determined to be in two categories: Procedural (181, 31 %) and Ready Reference (179, 31 %). The results are detailed in Appendix K.1.
- ✓ Type of Question for SQA (See Appendix L)
 - Content analysis of 200 questions from Yahoo! Answers was conducted by a team of two coders in order to develop a typology for determining why informational questions failed to get answers.

1. d. RESEARCH OUTCOMES:

Broad interest in research in the Cyber Synergy Research: The Cyber Synergy grant research is receiving a great deal of interest from the library community as well as the SQA community, and the data collection, analysis and dissemination is contributing to the library profession. Librarians, trainers, as well as other scholars in the Library and Information Science (LIS) field have expressed their interest in the research and the desire for the research findings to be shared. Calls for VRS librarian participation resulted in instant cooperation and sufficient numbers of respondents within a few days.

1. e. OTHER RESULTS:

The Cyber Synergy project has maintained a website hosted by OCLC since the start of the grant, <http://www.oclc.org/research/activities/synergy/default.htm>. The number of site visits and downloads continues to indicate a significant interest in our grant research with 366 page views for the main site and 159 page views for IMLS Supports Cyber Synergy Activity [OCLC Research News] as of October 10th, 2012.

To date, the results of the research compare specific characteristics of VR and SQA questions, which will inform the construction of design specifications for a collaborative system. The results indicate:

VRS Transcript Analysis:

- Ready reference accuracy in VRS has increased from 75% correct with citation included in 2004-2006 to 90% in 2010, which could possibly be attributed to the recommendations suggested by Connaway and Radford (*Seeking Synchronicity: Revelations and Recommendations for Virtual Reference*, 2011, p. 53-56).
 - Ready Reference and procedural VR questions have increased from 2004-2006 to 2010.
 - Subject VR questions have decreased from 2004-2006 to 2010.
- Most VRS questions are 2-3 on the READ scale, which indicates that some effort and time are required to answer the questions.
- The majority of VRS questions are within the subject areas of social sciences (16.8%) and technology (11.59%).
- The Total Average Wait Time for VRS questions was 67 seconds (1.12 minutes), while the Total Average Session Time was 1,126 seconds (18.77 minutes).

SQA Transcript Analysis:

- The main characteristics for the 200 failed SQA questions were spread across categories with significant concentrations in the too complex, overly broad sub-category (n=68, 34%), followed by lack of information (n=28, 14%), relatedness (n=26, 13%), and ambiguity (n=21, 10.5%), while socially awkward (n=8, 4%), excessive information (n=4, 2%), and poor syntax (n=2, 1%) showed less likely primary influence on failure rate.
- The results indicate a significant proportion of the failed SQA questions from the sample were too complex and/or overly broad (68, 34%). This signifies that a lack of perceived effort on the asker's part to craft a coherent question may cause difficulties in its subsequent interpretation. Moreover, questions from this category often involve topics too complex and/or specialized, which few people could address. We believe this is where a VRS librarian can step in, allowing us to link SQA and VRS.

VRS Librarian Phone Interviews:

In analysis of VRS librarian phone interviews which asked participants to describe their ideal VRS system, the majority gave the following comments or suggestions.

- The information is easy to find or the interface is easy to use and a standard interface.
- Results arrive quickly.
- The system allows for screen casting or a similar service.
- The system lets librarians know who is available and notifies experts that there is questions so that they can make themselves available.
- Answers to previous questions can be searched and new questions and answers can be added. (This is similar to the saved question and answer pairs in SQA sites.)

Librarians stated that they contact subject experts often (more than once a week) because they feel they do not have sufficient subject expertise to answer the questions. They contact the expert through various modes of communication, which include email, face-to-face, chat, and phone, with email and face-to-face being used the most.

1.f. Additional Comments

The three phases of the Cyber Synergy grant project are proceeding according to schedule and we anticipate that all grant activities will be concluded on time. Dissemination efforts have been successful to date with additional presentations and publications to come as we move into the second and final year of the project.

2. Certification

In submitting this report, I certify that all of the information is true and correct to the best of my knowledge.

Co-Principal Investigator

Date

Attachments:

- ✓ Appendix A: Query Clarification Coding Scheme, Nodes, and Definitions
- ✓ Appendix B: Radford Relational Coding Scheme, Nodes, and Descriptions
- ✓ Appendix C: READ Scale Applied to VRS
- ✓ Appendix D: VRS Duration/Time Factors
- ✓ Appendix E: VRS Librarian Interview Questions
- ✓ Appendix F: VR/SQA User Interview Questions
- ✓ Appendix G: VRS Educational Coding Scheme, Nodes, and Descriptions
- ✓ Appendix H: Coding Scheme for VRS Referrals
- ✓ Appendix I: Dewey Decimal Classes
- ✓ Appendix I.1 VRS Dewey Decimal Subject Coding Results
- ✓ Appendix I.2 SQA Dewey Decimal Subject Coding Results
- ✓ Appendix J: VRS Ready Reference Accuracy Category Descriptions with Transcript Examples
- ✓ Appendix J.1: VRS Ready Reference Accuracy Coding Results
- ✓ Appendix K: Type of VRS Query, Definitions with Attribution, and Verbatim Examples
- ✓ Appendix K.1: Type of VRS Question Results
- ✓ Appendix L: Typology for Failed Information SQA Questions

Appendix A: Query Clarification Coding Scheme, Nodes, and Definitions

Query Clarification Coding Scheme

Categories and Nodes

Juicy Quotes

(Clarifier)*

User

Librarian

(Clarification)

Yes

Scripted

No

No Clarification Necessary

(Type of question)

Open Question

Closed Question

(Query type)

Self-Generated Query

Imposed Query

School assignment

Work related

Unknown

(Stage of interaction)

Before Searching

During Searching

After Searching

(Information Sought)

Topic

Search History

Background

Extent/depth

Type of Resource

Verification

Correction

Follow-up Question

Referral Question

Query Clarification Coding Scheme
Node Descriptions with References & Transcript Examples

Nodes	Description	Examples
Juicy Quotes	Prime examples of any particular code below. Also includes examples of rare or unique occurrences in transcripts.	N/A
(Clarifier)		
User		N/A
Librarian		N/A
(Clarification)		
Yes	Occurrence of clarification	N/A
Scripted	An occurrence of clarification by means of a script	[Is this for a school assignment? If so, what grade level so I don't give you something that is to difficult or too easy.]
No	Absence of clarification	N/A
No Clarification Necessary	In light of content/detail of user's question, no clarification is necessary on the librarian's part. "We all know that some questions need no negotiations -- such as when the physical library is open, does the library provide a given service, or how to access databases when off campus. We know these questions do not need to be negotiated; because once the customer has the answer, they are gone. They hang up the phone or sign off of a chat service, sometimes without even saying thank you, thanks, or tks" (Kaske, 2004, p. 295).	U: "I cannot find the Writ of Execution form online with the other forms. Please direct me."** L: "That's form no. EJ-130. Here's the link:"
(Type of question)		
Open Question	"Questions are open when the response is left up to the respondent; when they <i>cannot</i> be answered 'yes' or 'no'" (King, 1972, p. 158). "Open questions... allow users to respond in their own words and do not limit answers to the narrow range of choices presented by the closed question: open questions are invitations to talk" (Dervin & Dewdney, 1986, p. 508).	L: "How are you hoping to use this information?"

<p>Closed Question</p>	<p>“Questions are closed when the respondent does not have a choice in his response other than those provided by the questioner” (King, 1972, p. 158).</p> <p>“Closed questions... limit the expected range of response to a ‘yes’/‘no,’ ‘this’/‘that’ answer... a closed question always restricts the freedom of the user’s response” (Dervin & Dewdney, 1986, p. 508).</p>	<p>L: “Do you want the Trenton or Washington representatives?”</p>
<p>(Query type)</p>		
<p>Self-Generated Query</p>	<p>User identifies an information need and asks a question</p> <p>[there is a] “need to differentiate between information seeking that is self-generated (users transacting questions they have determined for themselves) and imposed information seeking in which agent users seek information on behalf of someone else.” (Gross & Saxton, 2002, p. 252).</p> <p>“Self-generated questions arise from the context of a person’s life and are pursued by the person who is asking the questions. Imposed questions occur when the person who constructs the question asks someone else to transact it.” (Gross, 2005, p. 164).</p> <p>User identifies an information need and asks a question (“Each of these theories of the self-generated question has been useful in refining the ways in which we view and conduct the reference interview...” (Gross, 1995, p. 237).</p> <p>“information seeking may be either self-generated (internally motivated by personal context) or imposed (set in motion by someone else).” (Gross, 1999, p. 501).</p>	<p>U: “I want to plan a camping and rock climbing trip to Pilot Mountain. Do you have any recommendations?”</p>

Imposed Query	<p>“a question that is given to someone else to transact or resolve”</p> <p>“the <i>agent</i>, the person pursuing the question, has been put on this course by someone else (the <i>imposer</i>), and that the search is completed not when the agent finds the information but rather when the agent communicates it to the imposer” (Gross, 1995, p. 237).</p> <p>“Imposed queries emanate from both formal and informal relationships between people. For instance, students routinely use library services to answer questions posed by teachers, and likewise, there are various positions—research assistant, law clerk, administrative assistant, and so forth—that involve finding information for a supervisor or employer” (Gross, 1999, p. 501).</p>	(See below examples)
School Assignment	<p>Clarifies the school-related project requirements</p> <p>“How is the information going to be used?” (Katz, 2002, p. 133).</p> <p>“Why does the enquirer want this information?” (Taylor, 1968, p. 129).</p>	U: “For a history project, I must do a poster diagram of the evolution of pyramids from masatbas to step pyramids to straight-sided pyramids. Please find me websites and books (at least 1 book) with information on these different types of pyramids.”
Work Related	Clarifies work-related project requirements	U: “I work for a Poli-Sci professor and she needs some information from "The Working Press of the Nation" (magazines and internal publications directory). We don't have a copy of this on campus, and I haven't been able to reach the Reference desks of the 3 area libraries that have the book. Can you help?”
Unknown	Unable to determine origin of query	U: “who is the state rep for nj”
(Stage of interaction)		
Before Searching	Clarifies before beginning of search or at the beginning of interaction during or immediately following greeting ritual	N/A
During Searching	Clarifies after searching has commenced or in the middle of interaction	N/A

After Searching	Clarifies immediately before or even after closing ritual	N/A
(Information sought)		
Topic	Seeking or offering additional info on topic “...the primary purpose of negotiated subject definition is to provide some general delineation of the area... continued dialogue on the ramifications and structure of the subject will define, expand, narrow, and qualify the enquiry” (Taylor, 1968, 128).	L: “Where did you hear this term, in class?” L: “Do you mean what natural resources?” L: “What kind of advertisements are you thinking about or considering?” L: “I'm not finding that title. Do you know anything about it?”
Search History	Clarifies sources and strategies already used “How much information does the user already have about the topic?” (Katz, 2002, p. 133).	L: “Have you tried the last four digits of your phone number?” L: “Where have you looked for an answer to your question so far?”
Background	Clarifies personal background characteristics of user. This question “in the negotiation process has to do with the personal background of the inquirer... Answers to these types of question have relevance to the total negotiation process... in short, it is the context, the environment for the negotiation process” (Taylor, 1968, p. 129).	L: “Are you at uni?” “...what year are you in?” L: “Is this for a school project?” L: “...can you tell me more about your project...” L: “Can you tell me a bit more about your assignment?”
Extent/Depth	Clarifies extent/depth/amount of information sought “What degree of sophistication is required?” “How much is needed?” (Katz, 2002, p. 133).	U: “the thing is i need it to be simple and not to wordy so its easy to find the information that i need”
Type of Resource	Clarifies type of materials or formats for desired resources “What kind of information is needed?” (Katz, 2002, p. 133).	L: “Are you looking for books, articles, or online information?” L: “What sort of materials or formats are you interested in?” L: “Are you trying to find titles of e-journals, by keyword? Or, rather, are you trying to find individual articles?”

Verification	<p>Clarification by confirming/paraphrasing/summarizing “In any interview, no matter how short, it is wise to summarize the question of the facets of the question. The client may then correct or modify the librarian’s response” (Katz, 2002, p. 131). “echos” query (statement to confirm by paraphrasing/summarizing) “Other times, the librarian would echo the patron’s request in question (or question-like) form, either using the same words or paraphrasing what the patron had asked.” (Ford, 2003, p. 250).</p>	<p>L: “You want a web site on Brown vs Bd of Educ?” L: “So there was some kind of vote in your county back in 2000? Is that correct?” L: “OK so it sounds like you want to protest the election results.”</p>
Correction	<p>One corrects the other’s misunderstanding “...many of the questions asked – by librarians and patrons alike – moved interactions along by confirming understanding, and repairing misunderstandings.” (Ford, 2003, p. 249).</p>	<p>U: “i know you can access it as a student for free” L: “Yes, you can get into westlaw for free, but from what i can tell this is only access to legal information and laws, not individual criminal records”</p> <hr/> <p>L: “Do you eam the John Stevens who was the cheif engineer of the Panama Canal?” U: “No John Stevens III, He was the father of American Railroads”</p> <hr/> <p>L: “There is a book called Heroes of the Holocaust by Arnold Geier.” U: “no herous of the holocaust by allan zullo and mara bovsun”</p>
Follow-up Question	<p>Confirming user has received the correct information and the right amount “The follow-up question can help fix some of the problems which may occur during a reference interview (such as miscommunication, not understanding the question, faulty assumptions, etc.)...” (Durrance, 1995, p. 254). “This may be the single most important behavior because it has the potential for allowing one to remedy lapses in other desirable behaviors” (Gers & Seward, 1985, p. 34).</p>	<p>L: “Does it give you the info. you need?” L: “Does this answer your question?” L: “Do you think you can use what I've given you here?” L: “Does this completely answer your question?”</p>

Referral Question	Librarian asks if user would like to be referred to another librarian for follow-up to the query	L: "I'm not having much luck, a business librarian might know of a source I am missing, Can I have one contact you back via email?" L: "Would you like me to forward it for followup by email?" L: "There is a library in NJ that specializes in business questions. Would you like me to forward your question to them?"
--------------------------	--	---

Cited References:

- Dervin, B., & Dewdney, P. (1986). Neutral questioning: A new approach to the reference interview. *RQ*, 25(4), 506-512.
- Durrance, J. C. (1995). Factors that influence reference success: What makes questioners willing to return? *Reference Librarian*, 49/50, 243-265.
- Ford, C. E. (2003). An exploratory study of the differences between face-to-face and computer-mediated reference interaction. Unpublished doctoral dissertation, Indiana University.
- Gers, R., & Seward, L. J., (1985). Improving reference performance: Results of a statewide study. *Library Journal*, 110(18), 32-35.
- Gross, M. (2005). The imposed query. In K. E. Fisher, S. Erdelez, & L. (E. F.) McKechnie, *Theories of information behavior* (pp. 164-168). Information Today, Inc.: Medford, NJ
- Gross, M. (1999). Imposed queries in the school library media center: A descriptive study. *Library & Information Science Research* 21(4), 501-521.
- Gross, M. (1995). The imposed query. *RQ*, 35(2), 236-243.
- Gross, M., & Saxton, M. L. (2002). Integrating the imposed query into the evaluation of reference service: A dichotomous analysis of user ratings. *Library & Information Science Research*, 24(3), 251-263.
- Katz, W. A. (2002). *Introduction to Reference Work, Vol. 2*. Boston: McGraw-Hill.
- Kaske, N. (2004). The ubiquitous library is here. *portal: Libraries and the Academy*, 4(2).
- King, G. B. (1972). The reference interview: Open and closed questions. *RQ*, 12(2), 157-160.
- Taylor, R. S. (1968). Question-negotiation and information seeking in libraries. *College & Research Libraries*, 29, 178-194.

Appendix B: Radford Relational Communication Coding Scheme, Nodes, and Descriptions

RF: (Relational Facilitators)

- a. Greeting Ritual
 1. Scripted
 2. Unscripted
- b. Deference
 1. Agreement to Try What is Suggested or to Wait
 2. Apology
 3. Asking for Other to Be Patient
 4. Expressions of Enthusiasm
 5. Suggesting Strategy or Explanation in a Tentative Way
 6. Thanks
 7. Polite Expressions
 8. Praise, Admiration
 9. Self-Deprecating Remarks
- c. Rapport Building
 1. Familiarity
 2. Humor
 3. Interjections
 4. Offering Confirmation
 1. Approval
 2. Empathy
 3. Inclusion
 5. Offering Reassurance
 1. Encouraging Remarks/Praise
 6. Repair, Self-Correction
 7. Seeking Reassurance, Confirmation, Self Disclosure
 8. Self Disclosure
 1. Admitting Lack of Knowledge/at a Loss as to Where to Search
 2. Explaining Search Strategy
 3. Explaining Technical Problems
 4. Offer Personal Opinion/Advice/Value Judgment
 9. Informal Language
 1. Alternative Spelling, Abbreviated Single Words
 2. Slang Expressions
 10. Use of Other Person's Name
- d. Rerepresentation of Nonverbal Cues (Positive)
 1. All Caps For Emphasis
 2. Alpha-Numeric Shortcuts
 3. Asterisk or Symbol for Emphasis
 4. Phrase Abbreviations
 5. Spells Out Positive Nonverbal Behaviors
 6. Ellipsis
 7. Emoticons

8. Punctuation or Repeated Punctuation for Emphasis
9. Lower case (all or most)

e. Closing Ritual

1. Explanation of Signing Off Abruptly
2. Invites to Return If Necessary
3. Makes Sure User Has No More Questions
4. Offers to Continue Searching & E-Mail Answer
5. Makes or Offers Referral

RB: (Relational Barriers)

a. Failure to Build Rapport/Relational Disconnect

1. Condescending
2. Disconfirming
3. Failing to Offer Reassurance
4. Failure or Refusal to Provide Information when Asked
5. Goofing Around
6. Ignoring Humor
7. Ignoring Self-Disclosure
8. Impatience
9. Inappropriate Script or Response
10. Lack of Attention or Ignoring Question
11. Mirrors Rude Behavior
12. Mistakes
13. Misunderstands Question
14. Reprimanding
15. Robotic Answer
16. Rude or Insulting
17. Inappropriate Language
18. Jargon, No Explanation
19. Geographic Distance Problematic

b. Rerepresentation of Nonverbal Cues (Negative)

1. All Caps (FLAMING)
2. Spells Out Negative/Derisive NV Behaviors

c. Negative Closure

1. Abrupt Ending
2. Disclaimer
3. Failure To Refer
4. Ignoring Cues That User Wants More Help
5. Premature or Attempted Closing
6. Premature Referral
7. Inappropriate Referral
8. Sends to Google
9. Limits Time

Radford Relational Communication Coding Scheme

Node Descriptions with References & Transcript Examples

Facilitators

	Heading	Description
RF	(FACILITATORS)	Interpersonal aspects of the chat conversation that have a positive impact on the librarian-client interaction and that enhance communication (see also Radford, 1993, 1999, 2006).

Greeting Ritual

	Node	Description & Example
RFa	GREETING RITUAL	A hello message, marking the beginning of an interpersonal interaction by exchanging "salutations" (See Goffman, 1972, p. 79). E.g., Librarian: "Hi (name) what a great question!"
RFa1	Scripted	Uses "canned" greeting. (e.g., "Welcome to our VRS, a librarian will be with you shortly.")
RFa2	Unscripted	Personal hello message (e.g., "Hi, my name is Pat and I'm a librarian at X library. I see you have an interesting question.")

Deference

	Node	Description & Examples
RFb	DEFERENCE	Showing courtesy and respect for the other's experience, knowledge and point of view. Regularly conveying one's appreciation and confirming the relationship between participants (Goffman, 1956).
RFb1	Agreement to Try What is Suggested or to Wait	User: "Okay; I will, sure, no problem"
RFb2	Apology	L or U: "Sorry"
RFb3	Asking for Other to Be Patient	A request for the other to wait. L: "Will you hang on for a few minutes while I check..."
RFb4	Expressions of Enthusiasm	U: "Awesome! This gives me a great starting point for Saturday's research!" "Wow! This service is great!"
RFb5	Suggesting Strategy or Explanation in a Tentative Way	L: "Perhaps you should try...; I think you might want to try..."
RFb6	Thanks	Thank you, thanx, TY
RFb7	Polite Expressions	"Please, if you would be so kind; you're welcome"
RFb8	Praise, Admiration	U: "You are amazing!" "You're the best!"

RFb9	Self-Deprecating Remarks	U: "I don't know where to start; I'm not good at research; I am becoming a pain, aren't I?" L: "I'm not a good typist either."
-------------	---------------------------------	--

Rapport Building

	Node	Description & Examples
RFc	RAPPORT BUILDING	Aspects of the interaction that "involve[s] conversation encouraging give and take, establishment of mutual understanding, and development of relationships" (Radford, 1999, p. 25).
RFc1	Familiarity	Reference is made to knowing the other person or having had an interaction (FtF or in chat) with the other on a previous occasion (Radford, 1998)
RFc2	Humor	L: "This is a pickle!"
RFc3	Interjections	e.g., Oh, Well, Ah, Wow, Um, Hummm, Woa, Oops, Aha, etc.
RFc4	Offering Confirmation	"I agree"
RFc4.1	Approval	L: "Good idea," "good question"
RFc4.2	Empathy	L: "That is a difficult situation." "I hope you are feeling better."
RFc4.3	Inclusion	L: "Let's ... " "why don't we..." "Let me..."
RFc5	Offering Reassurance	L: "That's okay; don't worry about it, no one is perfect;" "Sure thing, I'll be right here;" "Just give them a call. It'll be fine."
RFc5.1	Encouraging Remarks/ Praise	L: "I am sure you can do this; you are doing very well." "This is pretty easy once you get the hang of it." "I hope this helps." U: "That's just great!"
RFc6	Repair, Self-Correction	"I meant sorry, not sarry;" "*sorry"
RFc7	Seeking Reassurance, Confirmation, Self Disclosure	"Can you help me with this?" "I'm going to try that, can you hang on while I try that?"
RFc8	Self Disclosure	U: "I am in 6th grade"; "I have never used this resource; I don't know... I'm not sure where to go to find information."
RFc8.1	Admitting Lack of Knowledge/at a Loss as to Where to Search	L: "I have not heard of this subject before, can you tell me more?"
RFc8.2	Explaining Search Strategy	L: "I am using the terms 'history' and 'Muslim' for this search in the Academic Search Premier database."
RFc8.3	Explaining Technical Problems	L: "Our system has been acting up today. It is slow."
RFc8.4	Offer Personal Opinion/Advice/Value	L: "I think you should try this first." "This resource is excellent."

	Judgment	
RFc9	Informal Language	Language that is relaxed or “Instant Messenger” speak
RFc9.1	Alternative Spelling, Abbreviated Single Words	Use for single word abbreviation (e.g., u,) and truncations (e.g., info, sec, lib, q. for question) and alternate spellings (e.g., thanx)
RFc9.2	Slang Expressions	U: “hey dude” “what up dawg?”
RFc10	Use of Other Person’s Name	L: “Hi Pat, I see you are in x city, how’s the weather there?”

Rerepresentation of Nonverbal Cues (Positive)

	Node	Description & Examples
RFd	REREPRESENTATION OF NONVERBAL CUES (POSITIVE)	The use of text characters or characteristics such as punctuation, emoticons, font, or abbreviations to represent POSITIVE nonverbal cues present in the face-to-face interaction (Radford, 2006). (Note: term “rerepresentation” used in Walther, 1999).
RFd1	All Caps for Emphasis	UPPERCASE, used to signify added importance (e.g., use EXACTLY these terms)
RFd2	Alpha-Numeric Shortcuts	Abbreviating phrases by using a combination of letters and numbers L8r (later), G2G (got to go), ne1 (anyone)
RFd3	Asterisk or Symbol for Emphasis	Demarcating a word for emphasis or to make a spelling repair through use of asterisk, ex. those who *are* affiliated or sorry *sorry
RFd4	Phrase Abbreviations	Using letters for phrase abbreviations e.g., LOL(laughing out loud), BRB (be right back)
RFd5	Spells Out Positive Nonverbal Behaviors	Spelling out words for facial expressions or nonverbal behaviors, e.g., Grin, wink wink, ha ha
RFd6	Ellipsis	Using ellipsis to indicate “word contact” e.g., “More...” or “still searching...”
RFd7	Emoticons	Using text characters to represent facial expressions, e.g., ;-)
RFd8	Punctuation or Repeated Punctuation for Emphasis	Wow! Thank you VERY MUCH!!!!!!!!!!!!
RFd9	Lower Case (all or most)	L: “ok. Let me do some search. will be back in a few.” U: “i need info on harry potter” (Note: Code once for a pattern of lower case use exhibited by individual throughout transcript).

Closing Ritual

	Node	Description & Examples
RFc	CLOSING RITUAL	A goodbye message that signals the end of

		interpersonal encounters, "some form of farewell display performed during leave-taking" (Goffman, 1972, p. 79).
RFe1	Explanation of Signing Off Abruptly	U: "G2G;" "I have to go have dinner." "My time on the computer is up now."
RFe2	Invites to Return If Necessary	L: "Please come back if you need more help."
RFe3	Makes Sure User Has No More Questions	L: "Is there anything else I can help you with?" "Have I completely answered your question?"
RFe4	Offers to Continue Searching & E-Mail Answer	L: "I will keep looking and e-mail you anything else I find."
RFe5	Makes or Offers Referral	L: "Here is the e-mail of the business librarian." "Please call your local library to find this information. Here is the phone number."

Barriers

	Heading	Description
RB	(BARRIERS)	Interpersonal aspects of the chat conversation that have a negative impact on the librarian-client interaction and that impede communication (see also Radford, 1993, 1999, 2006).

Failure to Build Rapport/Relational Disconnect

	Node	Description & Examples
RBa	FAILURE TO BUILD RAPPORT/ RELATIONAL DISCONNECT	Failing to encourage give and take, establish mutual understanding, and engage in relationship development (see Radford, 1999, p. 25).
RBa1	Condescending	L: "I think that it is too obvious. Just fill in the blanks with the words that make sense."
RBa2	Disconfirming	Indifferent, disqualifying (irrelevant, unclear or contradictory) or impervious (critical of other) response (Mathews, 1977, p. 80). L: "You should have checked the catalog first; your information is outdated."
RBa3	Failing to Offer Reassurance	Does not respond to questions, like: Can you help me? etc. Also failure to apologize when apology is called for.
RBa4	Failure or Refusal to Provide Information when Asked	Not replying when asked a direct question, not providing e-mail address when asked.
RBa5	Goofing Around	When user has no query, is just being playful.
RBa6	Ignoring Humor	Not responding with a "ha ha" "grin" or :) "smiley face" when other makes a joke.

RBa7	Ignoring Self-Disclosure	Failing to respond appropriately to other's disclosures.
RBa8	Impatience	Typing indications of haste: e.g., U: "Hurry up! Hurry, hurry!"
RBa9	Inappropriate Script or Response	Librarian sends the wrong script or gives an inappropriate response.
RBa10	Lack of Attention or Ignoring Question	Logging off when user has unanswered question or not attending to user's needs for assistance.
RBa11	Mirrors Rude Behavior	Flaming when other flames, becoming nasty if the other is nasty.
RBa12	Mistakes	Using or typing wrong word, providing wrong information
RBa13	Misunderstands Question	Failure to clarify question, searches for and/or finds inappropriate information. Can also be used for delayed question clarification, i.e., clarification after question has been inappropriately answered or after user provides information w/o being asked.
RBa14	Reprimanding	Reprove sharply or censure openly (Merriam-Websters Collegiate Dictionary, 1998). L: "You don't need to use all caps." "This is your homework, not mine."
RBa15	Robotic Answer	Pursuing a script when personal response was called for, e.g. when user self-discloses as ill.
RBa16	Rude or Insulting	Showing poor attitude, FLAMING, and other inappropriate comments. Ex. U: "Get a real job loser."
RBa17	Inappropriate Language	Use of any inappropriate language, curse words, etc.
RBa18	Jargon, No Explanation	Have you used ERIC, CATNYP, WorldCat?
RBa19	Geographic Distance Problematic	Ex. L: "I'm not in your local library and can't find that info on the Website. You will have to call or visit in person." Note: Includes time-related problems created by geographic distance. Ex: L: "Oh! Sorry, wasn't thinking since its already 10 here!"

Rerepresentation of Nonverbal Cues (Negative)

	Node	Description & Examples
RBb	REREPRESENTATION OF NONVERBAL CUES (NEGATIVE)	The use of text characters or characteristics such as punctuation, emoticons, font, or abbreviations to represent NEGATIVE nonverbal cues present in the face-to-face interaction (Radford, 2006).
RBb1	All Caps (FLAMING)	U: "I ONLY WANT GOLDFISH INFO GET THAT THROUGH YOUR THICK HEAD!"
RBb2	Spells Out Negative/Derisive NV Behaviors	U: "Ha Ha! I bet your spouse is cheating on you."

Negative Closure

	Node	Description & Examples
RBc	NEGATIVE CLOSURE	Strategies “that library staff use to end the reference transaction, apart from providing a helpful answer” (Ross & Dewdney, 1998, p. 154).
RBc1	Abrupt Ending	Person disappears in the middle of the encounter or at the end with no closing ritual or closing script
RBc2	Disclaimer	Librarian states that information is not available or they can not help. L: “I am not an attorney;” “I don’t think I will find that;” “This is all I can find;” “For more please go to your public library for information”
RBc3	Failure To Refer	Librarian is unable to help user but does not make an appropriate referral. Turns user away empty handed or with only a partial answer to query.
RBc4	Ignoring Cues That User Wants More Help	Librarian ignores request for additional help. L: “This is all I can find.” “For more please go to your public library.” U: “You did not help much.”
RBc5	Premature or Attempted Closing	L: “I think you have enough to get started, I can’t answer your other questions right now.”
RBc6	Premature Referral	Sending to another service, or physical library without clarifying the question.
RBc7	Inappropriate Referral	L: “Why don’t you call some of your classmates to see what they are doing about this.”
RBc8	Sends to Google	L: “Go back to Google and in the search box type in "segregation in education in the 1930's."
RBa9	Limits Time	L: “I think the easiest thing is for you to do the search yourself since we are closing in a few minutes; I must help other customers now, bye.”

Cited References:

Goffman, E. (1956). The nature of deference and demeanor. *American Anthropologist*, 58(3), 473-502.

Goffman, E. (1972). *Relations in public: Microstudies of the public order*. New York: Harper & Row.

Mathews, A. (1977). Confirming and disconfirming behaviors, self-acceptance and personal values: A descriptive study of librarian-user interactions. Ph.D. dissertation, University of Denver, United States – Colorado.

Merriam-Webster’s collegiate dictionary. (1998). Springfield, MA: Merriam-Webster, Inc.

- Radford, M. L. (1993). Relational aspects of reference interactions: A qualitative investigation of the perceptions of users and librarians in the academic library. Unpublished doctoral dissertation, Rutgers, The State University of New Jersey. DAI A54/07, 2368.
- Radford, M. L. (1998). Approach or avoidance? The role of nonverbal communication in the academic library user's decision to initiate a reference encounter. *Library Trends*, 46(4), 699-717.
- Radford, M. L. (1999). *The reference encounter: Interpersonal communication in the academic library*. Chicago: Association of College and Research Libraries.
- Radford, M. L. (2006). Encountering virtual users: A qualitative investigation of interpersonal communication in chat reference. *Journal of the American Society for Information Science and Technology*, 57(8), 1046-1059.
- Ross, C. S., & Dewdney, P. (1998). Negative closure: Strategies and counter-strategies in the reference transaction. *Reference & User Services Quarterly*, 38(2), 151-163.
- Walther, J. B. (1999, May). *Visual cues and computer-mediated communication: Don't look before you leap*. Paper presented at the annual meeting of the International Communication Association. San Francisco, CA.

Appendix C: READ Scale Applied to VRS

READ scale 1:

#1 questions

- **Least** amount of effort
- No specialized knowledge or skills
- No consult of resources
- “Less than 5 minutes.” (Illinois, 2012)*
- “Anyone in the library can answer” (Illinois, 2012)*
- “Mostly questions you can answer by pointing or with a few words” (Illinois, 2012)*

Examples:

- Directional
- Hours
- Machine assistance

READ scale 2:

#2 questions

- More effort than #1
- Minimal specific knowledge or skills
- Nominal resource consultation
- “Anyone in the library can answer” (Illinois, 2012)*

Examples:

General library or policy info

Machine assistance (N/A to VR)

Call number inquiries

Item location

More complex tech. assistance (how to save to a disk or email records, launching programs or re-booting).

READ scale 3:

#3 questions

- Some effort and time required
- Consultation of ready reference resource materials
- Minimal instruction of user
- Reference knowledge and skills come into play
- *”Subject based questions where 1 or 2 sources are briefly consulted, or a patron only requires 1 article/book” (Illinois, 2012).

- *”Referrals are done immediately, or after consulting 1 or 2 sources very briefly (Illinois,2012)”

READ scale 4

#4 questions

- Consultation of **multiple resources**
- **Subject specialist** consulted (OR REFERRED TO) AND **More thorough assistance and instruction**
- Reference knowledge and skills **NEEDED**
- Efforts more supportive for user, or answer difficult to find
- Exchanges more **instruction-based; in-depth research skills**
- ”Patrons require multiple sources for research”*(Illinois, 2012)

READ scale 5:

#5 questions

- More substantial effort and time assisting with research and finding info
- Subject specialists consulted (*rather than referred to[my note]*) [difficult to do with chat.]
- Consult appointments scheduled
- Cooperative efforts between user and librarian or with colleagues
- Multiple resources
- Research AND reference skills needed
- Dialogue between user and librarian
- ”Does not normally resolve at the reference desk; typically by email, consultation, etc.”*(Illinois,2012)
- ”May include primary sources as well as secondary sources”*(Illinois, 2012)

READ scale 6: (probably not applicable to VR-these would be referred to desk or specific specialist)

6 questions

- MOST effort and time
- Inquiries or request can’t be answered on the spot
- In-depth research and services for specific needs
- ”Special library” type research services
- Primary and secondary resource docs may be used

”Involves multiple days.”* (Illinois,2012)

References:

Gerlich, Bella Karr and Berard, G. Lynn, "Testing the Viability of the READ Scale: Qualitative Statistics for Academic Reference Services" The 2007 National Study College & Research Libraries. (Accepted for publication, anticipated January 2010, pre-print copy available online.)

Gerlich, Bella Karr and Berard, G. Lynn, "The READ Scale (Reference Effort Assessment Data)©: A Report on the United States National Study with Current Examples from the Field" Conference Proceedings, International Conference on Education, Research and Innovation, 2009. (forthcoming, 2010)

READ scale. Retrieved from: Readscale.org

University of Illinois at Urbana-Champaign University Library READ scale. Retrieved from: <http://www.library.illinois.edu/assessment/readscale.html>. Library modified READ scale by adding additional criteria, examples and instructions for coding.

Appendix D: VRS Duration/Time Factors

Wait time and Session Time

From June-December 2010

221,158 chat sessions

75,639 Qwidget (widget) sessions

QP Transcript Average Wait Time: 82 Seconds

QP Transcript Average Session Time: 1,162 Seconds

Widget Wait Time: 38 Seconds

Widget Session Time: 1,065 Seconds

Total Average Wait Time: 67 Seconds

Total Average Session Time: 1,126 Seconds

Appendix E: VRS Librarian Interview Questions

Demographic Questions

Date: _____ On Phone: _____ In Person: (location) _____ Skype: _____

2. Gender: Female Male (can be inferred from name and or voice on phone/in person)

3. Job title: _____

4. Years of experience at your current job: _____

5. Type and size of library or institution:

6. Total years of experience as librarian: _____

7. Age range: <25 25-34 35-44 45-54 55-64 <64

8. Areas of subject expertise (list all) _____

9. Type of reference services you have provided: Face-to-face Phone reference Virtual reference (list all types: email, live chat, txt, etc. and how long each VR has been provided)

VR service _____ how long provided _____

VR service _____ how long provided _____

VR service _____ how long provided _____

10. How often do you participate in providing virtual reference service (including all types)?

< 1 hour per week

1-3 hours per week

4-6 hours per week

7-10 hours per week

More than 10 hours per week

11. How busy is your reference service (including all types face-to-face, phone, & virtual reference) on a typical day?

Extremely busy very busy busy not busy extremely quiet

12. What is the relative level of activity for face-to-face and phone vs. virtual reference?

face-to-face busier about the same virtual reference busier don't know

13. Would you say the volume of all reference services at your library over the past year is:

increasing about the same decreasing not sure

Qualitative Questions

1. Remember a time when you had a difficult face-to-face or virtual reference (VR) question that required subject knowledge within your expertise that you successfully answered. Describe this interaction and why you felt it was successful.
2. Remember a time when you had a difficult face-to-face or virtual reference question which was outside of your area of expertise. Describe this encounter and what you did in this situation. What alternatives did you have, how did you decide to handle this question, and why?
3. How often do you consult a subject expert (e.g., librarian colleague, other expert) to help you answer a difficult reference question? How do you communicate with them?
4. Remember a time when you successfully sought help via collaboration with a colleague in answering a difficult reference question (either face-to-face or in VR). Describe what happened and what were the important factors that helped you to decide that it was successful?5.
5. Generally, what are key factors that determine whether or not you are going to refer a question to another librarian? Probe if not mentioned: have you ever referred because you are only able to give an incomplete answer or wanting to give more in-depth answer than you could
6. What would encourage or discourage you from seeking collaboration with other colleagues/subject experts? What (system, policy, or personal) realities prevent or enable you to engage in collaboration?
Probe: What would encourage or discourage you from making a referral to other colleagues/subject experts?
7. Are you aware of social Q&A services such as Yahoo! Answers, WikiAnswers, and AnswerBag? If yes, then how do you compare them with VR? Have you ever used SQA and for what purpose?
8. Have you ever posted a question to an SQA? Used a posted answer? If yes, describe.
9. What do you think of the idea of consulting subject experts who are not librarians in answering reference questions? Why do you feel this way? (Probe: ask about crowdsourcing like SQA sites). What question types do you think are suitable for social Q&A sites?
10. If you had a magic wand, what would be the perfect VR system to help you with difficult subject questions? What features would it have?
11. What comments about your experiences with collaboration and referrals in VR and SQA services would you like to add before we end our conversation?

Appendix F: VR/SQA User Interview Questions

Demographic Questions

Date: _____ On Phone: _____ In Person: (location) _____ Skype: _____

1. Gender: Female Male (can be inferred from name and or voice on phone/in person)

2. Your profession: _____

3. Areas of subject expertise (list all) _____

4. Age range: 12-18 19-25 26-34 35-44 45-54 55-64 <64

5. How often do you use virtual reference services (VRS) for librarian's assistance online?

- Occasionally
- 1-3 times per week
- > 3 times per week
- 1-3 times per month
- > 3 times per month

6. How often do you use social Q&A services (such as Yahoo! Answers, WikiAnswers, and AnswerBag)?

- Occasionally
- 1-3 times per week
- > 3 times per week
- 1-3 times per month
- > 3 times per month

7. How would you describe your search experience? (Very Inexperienced) 1 2 3 4 5 (Very Experienced)

8. How often do you search the Web?

- Occasionally
- 1-3 searches per day
- 4-6 searches per day
- 7-10 searches per day
- more than 10 searches per day

9. When you search, how often can you usually find what need? (Rarely) 1 2 3 4 5 (Very often)

Qualitative Questions

Questions on VRS: for those who answered yes to question 5 above.

1. *Discuss your use of VRS.*
Probe: Ask for motivations, satisfaction, and perceived quality of VRS.
2. *Discuss where you go for help when you have a difficult question outside of your area of subject expertise.*

Probe: If VRS is not mentioned, ask: Have you ever used VRS or thought of using VRS?
3. *What do you value in VRS?*
4. *How important is it that the librarian has subject expertise?*

Probes: When do you prefer to speak with a librarian who has subject expertise? Why do you want to speak to a subject specialist? How have you requested and communicated with a subject librarian?
5. *Please recall one specific virtual reference interaction that was in an area outside of your subject expertise that you would consider successful and describe. (Note to interviewer, if given a general example of interaction, push for one specific interaction: "Can you remember one of these in particular?") What in particular made this interaction successful for you?*
6. *Please recall one specific virtual reference interaction that was in an area outside of your subject expertise that you would consider unsuccessful and describe. (Note to interviewer, if given a general example of interaction, push for one specific interaction: "Can you remember one of these in particular?") What in particular made this interaction unsuccessful for you?*

Questions on SQA for those who answered yes to question 6, above.

1. *Discuss your use of SQA*
Probe for motivations, satisfaction, and perceived quality of various online Q&A services.
2. *Do you post questions on SQA? If so, discuss how you decide to use a question-answering service when posting a question.*
3. *Think of a time when you were on an SQA site. How did you get to this site? (Did you query a search engine like Google, did someone recommend it to you, did you go to the SQA site directly?)*
4. *Think of a time when you had a question and you were pushed to an SQA. Describe what happened. Why did you choose this source for this particular incident? How did you use the obtained information? Was it used for direct decision making or simply for reference?*
5. *Think of a time when you answered a question online. Where was it? Why did you decide to answer in this particular incident?*
6. *Under what circumstances do you consult a subject expert (e.g., teacher, advisor, senior colleague, family member, etc.) to answer your question? How do you communicate with the subject expert?*

Questions for all

1. If you had a magic wand and could create a site for all your information-seeking needs, what would it look like? Who would be answering your questions?

2. What questions or comments about virtual reference and social Q&A services would you like to add before we end our conversation?

Note: if participant has used both VRS and SQA, then they should be asked all above questions.

Appendix G: VRS Educational Coding Scheme, Nodes, and Descriptions

Educational Level Categories with Transcript Examples

Category	Description	Examples	Source
Primary School Student	Grades K-5	<p>U: WHAT KIND OF DEGERE DO U NEED?TO BE A SCHOOL CUNSELER</p> <p>L: Hello, I am a librarian in Madison.</p> <p>U: OMG AM FROM MILWAUKEE</p> <p>L: hit control F and then type in SCHOOL COUNSELOR</p> <p>U: WAT IS CONTROL F (qw2 340)</p>	Inferred – writing style
Secondary School Student	Grades 6-12	<p>U: hi i am doing a research project for school and i am in 12th grade and i want to know more about malcolm x's life and the things that made him famous. (qp2 225)</p> <p>U: I was wondering if there is a cd called I'm alive I'm dreaming by ready set in your library. (qp2 293)</p>	<p>Self-identified</p> <p>Inferred – age of target audience for the artist</p>
College Student	Undergraduate & graduate students	<p>U: I am looking for this article to be used in a research paper for the course BBUS 590: "Drivers of sales and marketing collaboration in business-to-business selling organisations". I can't find the article from UW library. Can you help me find it? (qp2 081)</p> <p>Question referred from community college library:</p> <p>U: i need scholarly sources taht discuss rhetoric creative writing</p> <p>L: And can you say more about what you need? like how to teach it? or techniques in writing?</p> <p>U: techniques in writing pretty much... or any essay that talks about using rhetorical devices (qp2 298)</p>	<p>Self-identified – mentions university library and course</p> <p>Inferred – topic of the question and referred by a college library</p>

Category	Description	Examples	
Adult	Not in college	<p>U: I want to stop having IEP and sto services for my son(qp2 304)</p> <p>U: I haven't logged into my account for several months. Unfortunately, I have forgotten my password. How can I retrieve my password or reset my password? Your prompt response will be most appreciated (qp2 316)</p>	<p>Self-identified – mentions child</p> <p>Inferred – writing style and referred by a public library</p>
Unknown	Education level is ambiguous and can apply to more than one category	<p>U: How and why are magnets used in fans, speakers, sewing machines, refrigerators, and televisions? (qp2 137)</p> <p>U: is boro park branch open now (qp2 346)</p>	<p>Question could be for an assignment for primary or secondary school student.</p> <p>No indication of user's age or grade level.</p>

Cited References

Connaway, L. S., Radford, M. L., Dickey, T. J., Williams, J. D., & Confer, P. (2008). Sense-making and Synchronicity: Information-seeking behaviors of Millennials and Baby Boomers." *Libri*, 58(2), 123-135. Pre-print available online at:
www.oclc.org/research/publications/archive/2008/connaway-libri.pdf

Radford, M. L. & Connaway, L. S. (2007). "Screenagers" and live chat reference: Living up to the promise. *Scan*, 26 (1), 31-39. E-print available online at:
<http://www.oclc.org/research/publications/archive/2007/connaway-scan.pdf>

Appendix H: Coding Scheme for VRS Referrals

Referral Definition:

A referral occurs when the librarian answering the reference question sends the user to another human being to get the answer to their query. The RUSA guidelines state that a referral exists to connect users to "other libraries and institutions and people inside and outside the library."

The process of defining VR referrals focuses on an examination of the librarian's response to the user's query. It is not relevant if user acknowledges the referral or not, just that the librarian made the attempt to refer the patron. The librarian must refer the patron to someone else for human contact, no matter how that contact is mediated. Providing contact information is almost always a referral, except when the patron's original query asks for contact information. For example, providing an address and phone number to answer the question "How do I contact my Senator?" is NOT a referral; it is an answer to a question.

Referral Codes:

Library (L)		
Local Library (L-LL)	Library that is geographically close to the user, one they already use or one on their campus.	"I would suggest emailing VPL staff directly; I can send you an email form that will allow you to do so." (QW2-021)
<i>New User (L-LL-NU)</i>	The librarian suggests a person become a user of library services or come into the library for further instruction.	"[User First Name] I would also recommend visiting your campus librarian for help with using the health resources a [sic] the college." (QP2-025)
Suggested Library (L-SL)	Librarian suggests a specific library/branch of a library system. The user has not mentioned the library in the transcript prior to the librarian's suggestion.	"If you want to research your general rights, I suggest you visit your local law library and have a law library [sic] assist you with the research." (This would also be coded L-LL) (QP2-343).
Another Library (L-AL)	A library that is neither local nor specific, but is explicitly stated in the course of the transcript.	"Alright, you are correct that you do have borrowing privileges as an alumnus at USC... Those include in person access to online databases, so you might have to travel to the campus to retrieve the article." (QP2-098)
Specific Person (L-SP)	The librarian refers the user to a specific person at a library by name and gives contact information.	"Electrical Engineering [name] [phone number] [email] Science/Engineering Reference; 108...[O]k, so if you email [name], she can take care of this for you." (QW2-093)
Department (L-D)	The librarian refers the user	"Can I put you in touch with the

	to a library department that can best answer their question.	ILL department at TRU?" (QW2-026)
Another VRS (L-VRS)	The librarian refers the user within the VRS environment.	"Okay, well, Academic AskAway is where you can get help. What school do you attend so I can send you the link?" (QW2-023)

Non-Library (NL)		
Business (NL-B)	User is sent to a specific business to answer their question	"I would suggest you contact AT&T as they would have access to your account." (QP2-051)
Professional (NL-P)	User is sent to talk to a non-librarian person who could best answer their question, such as their teacher, a doctor or lawyer.	"[Y]ou would need to discuss this more with a medical professional to see which of the reasons on that last link might apply to you." (QW2-202)
<i>Instructor (NL-P-I)</i>	User is referred to an instructor, such as a teacher or professor.	"I would recommend double checking with your professor, I'm sure they wouldn't mind if you sent a short email" (QW2-181)
Institution (NL-I)	User is sent to a non-library institution, such as a historical society, college office, etc. to get the answer to their question.	"I would strongly advise you to contact a [sic] Oakland University academic advisor to create a plan of work for you." (QW2-203)
Government Agency (NL-GA)	User is referred to a government agency	"Well I would contact the agency that provides them..." (QP2-304)
Tech Support (NL-TS)	User is sent to some form of technical support service for help resolving a technical support issue.	"I would recommend trying the browser settings and if that doesn't work, then you could try the experts at ... the email service" [librarian provides QP tech support link] (QP2-110)
<i>QuestionPoint Tech Support (NL-TS-QP)</i>	User is referred to QP technical support.	(QP2-110)
Specific Person (NL-SP)	User is referred to a specific person that does not work at a library.	"I would strongly encourage you to contact [name] on the Department of Public Instruction's Special Education Team." (QP2-304)

Note: Transcripts can be coded with as many codes as fit the transcript. No combinations of codes are mutually exclusive.

Appendix I: Dewey Decimal Classes

The following are the major 10 classes of the Dewey Decimal Classification (DDC).

000-Computer science, information and general works

100-Philosophy and psychology

200-Religion

300-Social sciences

400-Language

500-Science (including mathematics)

600-Technology and applied science

700-Arts and recreation

800-Literature

900-History and geography

Reference:

Dewey, M. (2011). *Dewey Decimal Classification and Relative Index* (23rd ed., J. S. Mitchell, J.

Beall, R. Green, G. Martin, & M. Panzer, Eds.). Dublin, OH: OCLC.

Appendix I.1: VRS Dewey Decimal Subject Coding Results

VRS Questions by Dewey Decimal Classification

Dewey Decimal Classification Category	# VRS Questions	Percent
000 Generalities	39	5.65%
100 Philosophy & Psychology	18	2.61%
200 Religion	15	2.17%
300 Social Sciences	116	16.81%
400 Language	13	1.88%
500 Natural Science & Mathematics	33	4.78%
600 Technology (Applied Sciences)	80	11.59%
700 The Arts	27	3.91%
800 Literature & Rhetoric	58	8.41%
900 Geography & History	30	4.35%
Other (includes Procedural, Directional, No Subject, Holdings, Inappropriate, Test, Unclear)	261	37.8%
Total VRS Questions	690	100.00%

Appendix I.2: SQA Dewey Decimal Subject Coding Results

Following the procedures and policies developed for the Dewey Decimal Classification (DDC) coding of the QuestionPoint transcripts, the 200 SQA questions were coded for subject to the hundred divisions of the ten main DDC classes. Non-Dewey codes were also applied: Inappropriate for questionable content; Foreign for a question referencing a foreign language video. A random sample of 20 SQA questions was selected for inter-coder reliability DDC coding. After reconciliation of these 20 SQA question codes by the two coders (MVE and EMH), a total of 225 DDC subject codes were assigned for the 200 SQA questions. The breakdown of these final subject codes for the ten main DDC classes is:

<u>Dewey Class</u>	<u>% SQA questions</u>
000 Computer science, information & general works	4%
100 Philosophy & psychology	1%
200 Religion	0
300 Social sciences	38%
400 Language	2%
500 Science	4%
600 Technology	28%
700 Arts & recreation	12%
800 Literature	3%
900 History & geography	7%
Non-Dewey codes	1%

Of these main classes, seven DDC subject codes represented 50% of the 225 DDC question codes assigned. These Dewey classifications are:

<u>Dewey Classification</u>	<u># of SQA Questions</u>
330 Economics	31
790 Sports, Games & Entertainment	19
380 Commerce, Communications & Transportation	16
620 Engineering	14
610 Medicine & Health	12
300 Social Sciences, Sociology & Anthropology	10
630 Agriculture	10

Appendix J: VRS Ready Reference Accuracy Category Descriptions with Transcript Examples

Accuracy Category	Description with Citation	Explanatory Notes	Examples
1. Correct with Citation	Question is answered completely and accurately with appropriate reference (Arnold & Kaske, 2005)	The answer can be complete, accurate and cited even when the answer is no.	User (U): "can you please send me song lyrics for Under pressure by my chemical romance?" Librarian (L) sent lyrics along with link http://www.plyrics.com/lyrics/mychemic_alromance/underpressure.html (QP1-001)
2. Correct without Citation	Question is answered completely and accurately without appropriate reference (Arnold & Kaske, 2005)	A citation would have been appropriate but would not have changed the accuracy of the response.	U: "What is the definition of alliumphobia?" L: "Fear of gralic [garlic]" (QP1- 038)
3. Correct, no Citation Needed	Question is answered completely and accurately without appropriate reference and none is needed (Arnold & Kaske, 2005)	Answers are so obvious or well-known no citations are needed.	U: "how do ypu say test plurally. Is tests acceptable?" L: "Yes, tests is the correct form of the plural" (QP 24/7-191) ----- U: Hi. I'm looking for the disc about a rat that becomes a celebrated French chef. It's all computer animation, of course. Could you help me with the name of this film so I can look up its availability? L: Answer: Ratatouille. No citation needed because it's in popular culture, general knowledge. Ratatouille (2007) Disney film. See http://disney.go.com/disneypictures/ratatouille/ (QW- 030)
4. Incorrect with Citations	Question is answered incompletely or inaccurately with appropriate reference (Arnold & Kaske, 2005)	The question was not answered, but the user could find the answer from the site provided.	U: "How far is it from Maryland to the North Pole?" L provided the North Pole website and general location information (QP1-14)

<p>5. Incorrect without Citations</p>	<p>Question is answered incompletely or inaccurately without appropriate reference (Arnold & Kaske, 2005)</p>	<p>Further research finds that answer was wrong and no citations were provided.</p>	<p>U: "How do I know when a journal is peer reviewed or are all journals peer reviewed?"</p> <p>L: "When instructors say 'peer reviewed' they usually mean simply scholarly journals. 'Peer reviewed' journals are a small subset of scholarly journals" (QP 24/7-225)</p>
<p>6. Incorrect (without specific information requested, with only general/ related resource)</p>	<p>Question is answered incompletely or inaccurately with reference that is related to inquiry but does not address specific question (new category)</p>	<p>General answer to the inquiry without responding to specific information request but cites provide general information on the topic.</p>	<p>U: "Where is the great wall of china on a map with longitude, lattitude with near by cities on scale?"</p> <p>L: pushed this link (http://www.travelchinaguide.com/china_great_wall/) which is about the Great Wall but has no map or information about longitude, latitude or nearby cities. (QP 24/7-261)</p>
<p>7. Other</p>	<p>Miscellaneous (new category)</p>	<p>A variety of circumstances, including librarian unable to find answer and users finding information themselves. Does not include responses that were terminated without an answer due to technical problems or inquiries that were referred elsewhere.</p>	<p>U: "What is the number to financial aid" L: "Okay. Let me see if I can find the number for you. Please hold on." U: "thanks sorry found it" (QP 24/7-100) ----- U: who is selena? (Then signs off.) (QP2- 199) ----- U asks for information about an animal? then answers the librarian's follow up question what animal?? with ?a short tail weasel?. Then the user signs off. (QW-003).</p>

Appendix J.1: VRS Ready Reference Accuracy Coding Results

Category	Queries (N=168)	Percent
Correct	151	90%
Incorrect	7	4%
“Other”	10	6%
Correct with Citation	114	75%
Correct without Citations	21	14%
Correct no Citation Needed	16	11%

Appendix K: Type of VRS Query, Definitions with Attribution, and Verbatim Examples

Type of Query	Definition and Attribution	Verbatim Examples
1. Subject Search	Focuses on a topic, called "specific search," defined by Arnold and Kaske (2005) as a question whose answer: "Almost always takes the form of giving the user a document, for example, a list of citations, a book, or a report" (p.179).	<p>"Can you help me find poems by Maya Angelou and criticism on them?" (QP1 230)</p> <p>"Where can i find information about ADHD?" (QP2 005)</p> <p>"How was the labeling theory important in deinstitutionalization?" (QW 023)</p>
2. Ready Reference	"The typical ready-reference or data queries that require only a single, usually uncomplicated, straightforward answer...Who? What? When? Why? Where?" (Arnold & Kaske, 2005, p. 179).	<p>"Who was Bentonville, NC named after?" (QP2 147)</p> <p>"How do i cite a political talk show in MLA format?" (QP2 013)</p> <p>"who won the world cup game between south africa and france?" (QW 024)</p>
3. Procedural	"Questions pertaining to the policies or procedures within the library system" (Arnold & Kaske, 2005, p.180).	<p>"Can I get summer long term renewals online? How?" (QP1 004)</p> <p>"need access logon info to lexis from scool library website" (QP2 027)</p> <p>"what is the max for checkout on blu ray dvids?" (QW 033)</p>
4. No Question	VRS systems test, practice sessions, and any interaction with no discernible reference question (new).	N/A
5. Holdings	"Questions about specific holdings of a library in print or digital form" (Arnold & Kaske, 2005, p.180).	<p>"Do you have any books on Paris Hilton? (doing a project on her)" (QP1 195)</p> <p>"I was wondering if you have textbooks to rent for an hour or 2?" (QP2 172)</p> <p>"hi there; i was wondering if you guys have Moby Dick in stock?" (QW 014)</p>
6. Research	"involve trial-and-error searching or browsing... [and] are usually identified as coming from an adult specialist who is seeking detailed information to assist in specific work" (Arnold & Kaske, 2005, p.180).	<p>"Hi, I am trying to find out information on how the Learn Direct initiative was started, the criteria that was set and if local government had to be involved in the first stage." (QP1 155)</p> <p>"Looking for information on national traffic survey and incident reports." (QP2 169)</p>

		“Hi I’m looking for studies similar to one I’ve already found. How do I go about this?” (QW 013)
7. Inappropriate	Questions which are not appropriate for a reference service including personal questions and advice-seeking (new).	“How do I have sex?” (QP1 159) “WAT DOES it mean when a guy said he like me more as a friend doesnt it mean like a gf?” (QP2 153) “Are (send) You (send) Typing (send) War (send) and Peace (send)” (QW 020)
8. Directional	“The general information or directional question is of the information booth variety...” (Arnold & Kaske, 2005, p.179).	“Where is the 67th street library? Is it on the west or east side?” (QP1 387) “what is the URL for the summer reading program for teens?” (QP2 032) “I heard that you have adapted book kits for ESL speakers. Where can I find these online?” (QW 008)
9. Reader’s Advisory	“Focused on helping readers find materials they want to read, listen to, or view for pleasure” (Ross, Nilsen, & Radford, 2009, p. 235).	“Hello I am looking for recommendations for the author jonathan kellerman.” (QP1 218) “I was wondering if u would happen to know any good fantasy books...” (QP2 050) “Hi, my 7 year old son is looking for a copy of the Hobbit suitable for children, but we can’t seem to find anything in the library catalogue. Can you please offer any advice? Thanks.” (QW 120)

References:

- Arnold, J., & Kaske, N. K. (2005). Evaluating the quality of a chat service. *portal: Libraries and the Academy*, 5(2), 177-193.
- Kaske, N., & Arnold, J. (2002, June). *An unobtrusive evaluation of online real time library reference services*. Paper presented at the American Library Association, Annual Conference, Atlanta, GA.
- Katz, W. A. (1997). *Introduction to reference work*. (7th ed.). New York: McGraw-Hill.
- Radford, M. L., & Connaway, L. S. 2005–2008. *Seeking Synchronicity: Evaluating virtual reference services from user, non-user, and librarian perspectives*. Funded by the Institute of Museum and Library Services (IMLS), Rutgers University, and OCLC
<http://www.oclc.org/research/activities/synchronicity/default.htm>
- Ross, C. S., Nilsen, K., & Dewdney, P. (2002). *Conducting the reference interview: A how-to-do-it manual for librarians*. NY: Neal-Schumann.
- Ross, C. S., Nilsen, K., & Radford, M. L. (2009). *Conducting the reference interview* (2nd ed.). New York: Neal-Schuman.

Appendix K.1: Type of VRS Question Results

Type of Question	Queries (n=575)	Percent
Procedural	181	31%
Ready Reference	179	31%
Subject Searches	97	17%
Holdings	49	9%
No Question	25	4%
Research	19	3%
Directional	15	3%
Reader's Advisory	6	1%
Inappropriate	4	<1%

Appendix L: Typology for Failed Information SQA Questions

Category	Definition
1. Unclear	
Ambiguity	Question is too vague or too broad, and for this reason, is misunderstood or causes multiple interpretations.
Lack of information	Not enough information exists to identify the asker's intended information-seeking goal.
Poor syntax	Question syntax is ill formed, has typos, or has Internet slang that hampers understanding.
2. Complex	
Too complex and/or overly broad	Question is too complicated and a few people have the ability and/or the resources necessary to provide answers, even though enough details are provided to identify the asker's intended information-seeking goal.
Excessive Information	Question contains an excessive amount of information that may lose people's attention to (or interest in) answering it.
3. Inappropriate	
Socially awkward	Question is inappropriate, too personal, or socially taboo.
Prank	Question is posed as a joke or to get a reaction
Sloths	Question is homework related and often reflects a perceived "laziness" of the askers to obtain an answer themselves or to actively participate in the SQA community outside of posting questions.
4. Multiple Questions	
Relatedness	Title and/or content poses more than one question (although they are related), so the answerers may be confused in interpreting the asker's intended information-seeking goal.
Un-relatedness	There is more than one question posed and subsequent questions are unrelated, causing potential respondents to be confused in interpreting the asker's intended information-seeking goal.